Variation of the Bandgap of TiO_2 with Particle Size

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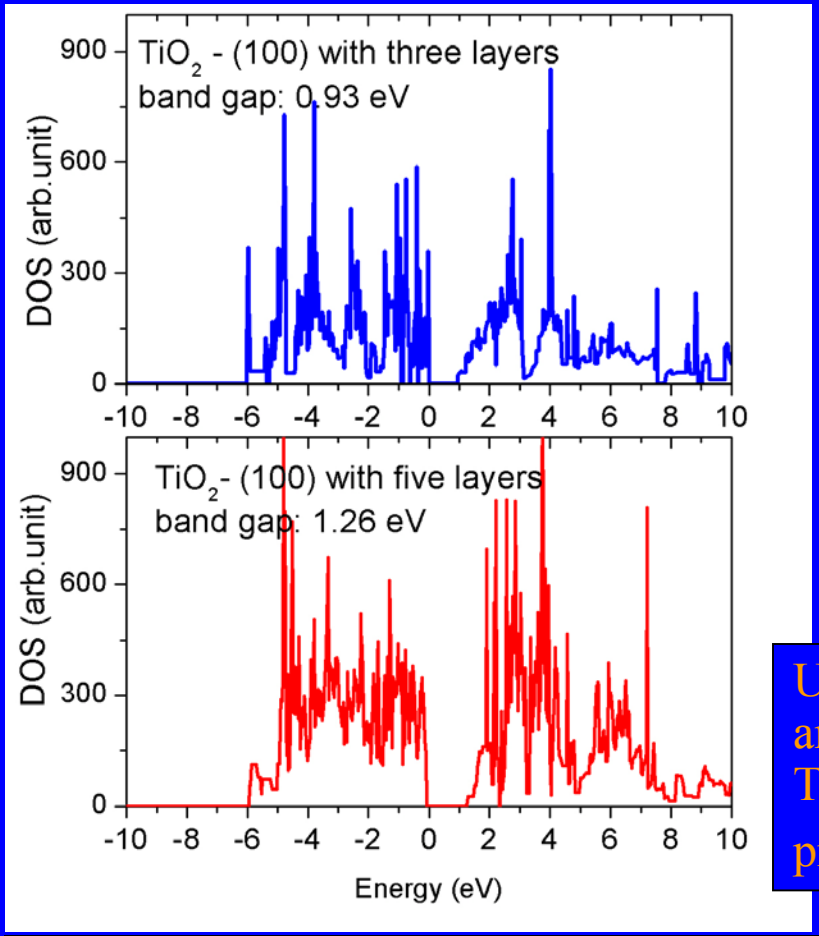

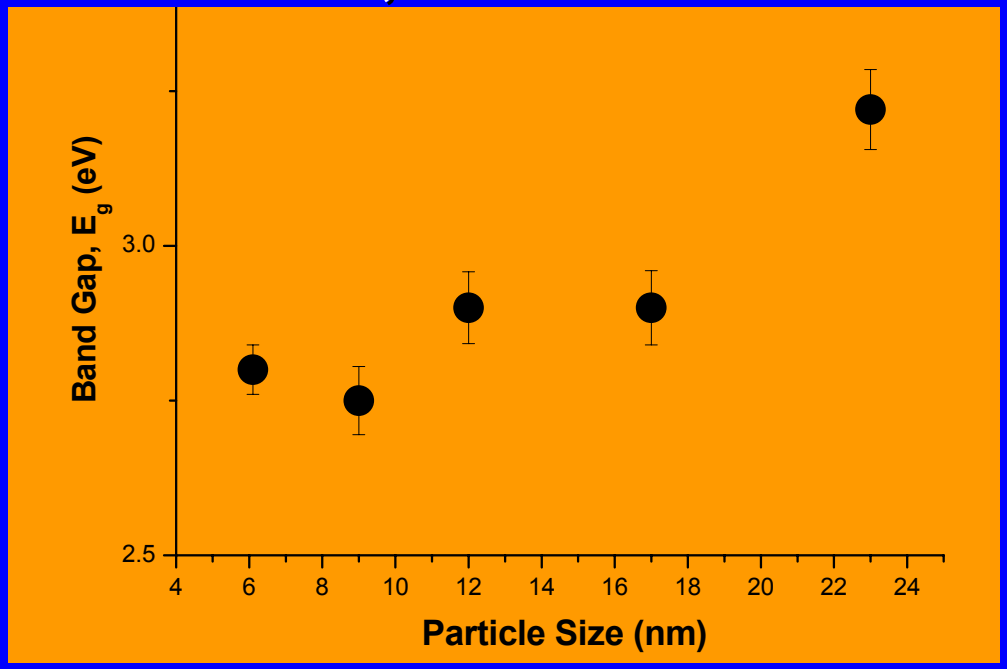

UV-VIS measurement of the band gap, E_g, of TiO_2 anatase nanoparticles as a function of the particle size. The decrease in the E_g allows the photocatalytic processes to be carried out by the visible light.

DFT (density functional theory) based LAPW (linearized augmented plain wave) method was applied to calculate the slab TiO_2 in anatase structure. The quantum confinement effect comes into picture when particle size decreases below the Bohr radius and is not included in this calculation.

REU Students: First Exposure to Nanotechnology

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Four REU students are working in the University of Delaware labs to get hands on experience with nanotechnology. This is their first experience in the field of Nanotechnology. This, the first year of the REU supplement to the NIRT grant, yielded several presentations. Two papers have also been submitted for presentation at MRS. One paper has been submitted to J. Nanoscience and Nanotechnology and another one is being prepared for submission. REU students also helped with the Outreach Programs showing vacuum technology modules to local schools.